

IN THE UNITED STATES ELECTED OFFICE (EO/US)

10/559,920	08 December 2005 (8.12.05)	17 June 2003 (17.06.03)
US Application No.	Filing Date	Priority Date Claimed

METHOD FOR THE LAYERED CONSTRUCTION OF MODELSTitle of InventionHochsmann, RainerApplicant(s)

Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**COMPLETION OF FILING REQUIREMENTS
FOR INTERNATIONAL APPLICATION ENTERING U.S. NATIONAL STAGE
IN U.S. ELECTED OFFICE (EO/US) UNDER 35 U.S.C. § 371**

This replies to the Notice of Missing Requirements under 35 U.S.C. § 371 and 37 C.F.R. § 1.495 (FORM PCT/DO/EO/905).

A copy of FORM PCT/DO/EO/905 accompanies this response.

DECLARATION OR OATH

I. No original declaration or oath was filed. Enclosed is the original declaration or oath for this application.

FEES**II.**

Each independent claim in excess of 3 (37 C.F.R. § 1.492(d))	\$0.00
Each claim in excess of 20 (37 C.F.R. § 1.492(e))	\$0.00

CERTIFICATE OF MAILING

I hereby certify that this paper, along with any document referred to, is being filed EFS at USPTO.GOV addressed to Mail Stop PCT Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Shelley L. Erla
Type or print name of person mailing paper

Date: 4/20/04

Shelley L. Erla
Signature of person certifying

Applicant believes that there are no additional fees due for claims as indicated on page 2 of the Notification for "\$50.00 for 1 total claims over 20". Please see attached Preliminary Amendment and please note that there are only 20 claims as claim 13 was cancelled. The undersigned welcomes any questions the Examiner may have regarding this matter.

Surcharge fees

Surcharge for filing the oath or declaration later than thirty months from the priority date pursuant to § 1.495(c) and § 1.492(h):	\$130.00
Total Fees	\$130.00

EXTENSION OF TIME

III. The proceedings herein are for a patent application. Accordingly, the provisions of 37 C.F.R. § 1.136(a) apply.

Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

TOTAL FEE DUE

IV. The total fee due is:

Completion fee(s)	\$130.00
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TOTAL FEE DUE \$130.00

PAYMENT OF FEES

V.

Please charge Deposit Account 50-1097 in the amount of \$130.00.

Charge any additional fees required by this paper or credit any overpayment to deposit account no. 50-1097.

Date: 4-20-06

/Eric M. Dobrusin/

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 United States Commissioner for PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22314-1450
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U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
10/559,920	Rainer Hochsmann	1156-011
		INTERNATIONAL APPLICATION NO.
		PCT/DE04/01223
25215 DOBRUSIN & THENNISCH PC 29 W LAWRENCE ST SUITE 210 PONTIAC, MI 48326	I.A. FILING DATE	PRIORITY DATE
	06/14/2004	06/17/2003
CONFIRMATION NO. 9583		
371 FORMALITIES LETTER		
 *OC000000018313946*		

Date Mailed: 03/24/2006

NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 U.S.C. 371 IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as a Designated / Elected Office (37 CFR 1.495).

- Copy of the International Application filed on 12/08/2005
- Copy of the International Search Report filed on 12/08/2005
- Preliminary Amendments filed on 12/08/2005
- U.S. Basic National Fees filed on 12/08/2005
- Priority Documents filed on 12/08/2005

The applicant needs to satisfy supplemental fees problems indicated below.

The following items **MUST** be furnished within the period set forth below in order to complete the requirements for acceptance under 35 U.S.C. 371:

- Additional claim fees of **\$50** as a non-small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.
- Oath or declaration of the inventors, in compliance with 37 CFR 1.497(a) and (b), identifying the application by the International application number and international filing date.
- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.492(h) of **\$130** for a non-small entity, must be submitted with the missing items identified in this letter.

SUMMARY OF FEES DUE:

Total additional fees required for this application is **\$180** for a Large Entity:

Received
 MAR 30 2006

Debrusin & Thennisch, P.C.

- \$130 Surcharge.
- Total additional claim fee(s) for this application is **\$ 50**
 - \$50 for 1 total claims over 20.

ALL OF THE ITEMS SET FORTH ABOVE MUST BE SUBMITTED WITHIN TWO (2) MONTHS FROM THE DATE OF THIS NOTICE OR BY 32 MONTHS FROM THE PRIORITY DATE FOR THE APPLICATION, WHICHEVER IS LATER. FAILURE TO PROPERLY RESPOND WILL RESULT IN ABANDONMENT.

The time period set above may be extended by filing a petition and fee for extension of time under the provisions of 37 CFR 1.136(a).

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

A copy of this notice MUST be returned with the response.

FREDERICK SMITH

Telephone: (703) 308-9140 EXT 210

PART 1 - ATTORNEY/APPLICANT COPY

U.S. APPLICATION NUMBER NO.	INTERNATIONAL APPLICATION NO.	ATTY. DOCKET NO.
10/559,920	PCT/DE04/01223	1156-011

FORM PCT/DO/EO/905 (371 Formalities Notice)

Express Mail No. EV789807903US

PCT/DE04/001223	14 June 2004 (14.06.04)	17 June 2003 (17.06.03)
International Application No.	International Filing Date	Priority Date Claimed

METHOD FOR THE LAYERED CONSTRUCTION OF MODELS

Title of Invention

Hochsmann, Rainer

Applicant(s)

Attorney Docket No. 1156-011

Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Prior to national phase examination pursuant to 35 U.S.C. § 371 et. seq. (which is requested to begin immediately), please amend the above-identified application as follows and consider the following remarks.

CLAIMS

Claim 1 (currently amended) A procedure for layered composition of models, comprising the steps of: applying whereby at least a first material layer that includes a moulding sand and optionally a bonding agent that includes a salt-crystal binder, a protein binder, or both is applied to an assembly platform, and applying followed by selective application of a second material layer that includes a moulding sand and optionally a bonding agent that includes a salt-crystal binder, a protein binder, or both; and repeating these two application steps are repeated until the required model is achieved and both materials form a solid structure in an appropriate mixture ratio, the first material layer, the and/or second material layer or both comprises a bonding agent encompassing comprising a salt-crystal binder, a and/or protein binder, or both.

Claim 2 (currently amended): A procedure according to claim 1, whereby the bonding agent is mixed into the material of the first material layer.

Claim 3 (currently amended): A procedure according to claim 1 or 2, whereby the first material layer includes is-a mixture comprising a solvent, the bonding agent and moulding sand.

Claim 4 (currently amended): A procedure according to one of the previous claims claim 3, whereby the moulding sand is coated with the bonding agent.

Claim 5 (currently amended): A procedure according to one of the previous claims claim 1, whereby the bonding agent is mixed into the material of the second material layer.

Claim 6 (currently amended): A procedure according to one of the previous claims claim 1, whereby the first material layer comprises moulding sand and bonding agent, which is selectively contacted with and the second material comprises a solvent.

Claim 7 (currently amended): A procedure according to one of the previous claims claim 6, whereby the solvent essentially comprises water.

Claim 8 (currently amended): A procedure according to one of the previous claims claim 1, whereby the second material solvent is applied by means of droplet generation.

Claim 9 (currently amended): A procedure according to one of the previous claims claim 1, whereby the second material solvent is applied by means of screen printing or spraying through a template.

Claim 10 (currently amended): A procedure according to one of the previous claims claim 1, whereby the solvent is removed by drying after an appropriate reaction time has elapsed.

Claim 11 (currently amended): A procedure according to one of the previous claims claim 1, whereby the moulding sand comprises quartz sand, zircon sand, olivine sand and/or fireclay sand.

Claim 12 (currently amended): A procedure according to one of the previous claims claim 1, whereby the bonding agent comprises magnesium sulphate, sodium polyphosphate and/or proteins.

Claim 13 (cancelled).

Claim 14 (new): The procedure of claim 1, whereby the model is metal casting mould

Claim 15 (new): A procedure for layered composition of a metal casting mould, comprising the steps of:

- a) mixing solid particles of a bonding agent comprising a salt-crystal, a protein or a combination thereof, with a sand that comprises quartz sand, zircon sand, olivine sand, fireclay sand or a combination thereof, to form a bonding agent/sand admixture,
- b) applying a thin layer of the bonding agent/sand admixture to an assembly field of an assembly platform;
- c) selectively applying a solvent to the bonding agent/sand admixture in required areas;
- d) lowering the assembly platform; and
- e) repeating at least steps (a)-(c) for applying an additional layer.

Claim 16 (new) The procedure of claim 15, characterized in that the solvent is water and is applied in a sufficient dose so that it is capable of bonding particles of sand within a layer to each other, to underlying sand particles that may be present; and the moulding sand comprises quartz sand, zircon sand, olivine sand, fireclay sand or a combination thereof; and

Claim 17 (new) The procedure of claim 15, characterized in that the sand includes a quartz sand and the bonding agent includes a salt-crystal binder.

Claim 19 (new) A metal casting mould including a plurality of layers of a bonding agent/sand admixture comprising a salt-crystal, a protein or a combination thereof, with a sand that comprises quartz sand, zircon sand, olivine sand, fireclay sand or a combination thereof, prepared according to the method of claim 15.

Claim 20 (new): A procedure for layered composition of a metal casting mould, comprising the steps of:

- a) mixing solid particles of a bonding agent comprising a salt-crystal, a protein or a combination thereof, with a sand that comprises quartz sand, zircon sand, olivine sand, fireclay sand or a combination thereof, to form a bonding agent/sand admixture,
- b) applying a thin layer of the bonding agent/sand admixture to an assembly field of an assembly platform;
- c) selectively applying water, in a sufficient dose so that it is capable of bonding particles of sand within a layer to each other, to underlying sand particles that may be present, to the bonding agent/sand admixture in required areas for reacting it with the bonding agent/sand admixture;
- d) drying the water;
- e) lowering the assembly platform; and
- f) repeating at least steps (a)-(d) for applying an additional layer.

Claim 21 (new) The procedure of claim 20, further characterized by a step of recycling the sand from the resulting mould.

REMARKS

After entry of this preliminary amendment, claims 1-12 and 14-21 will be pending. Claim 13 has been cancelled without prejudice. Amendments to the claims as filed are non-substantive and designed to bring the claims into standard U.S. format and to remove multiple dependencies.

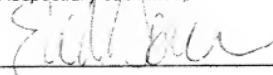
By amending the application, the Applicants do not concede that the patent coverage available to them would not extend as far as the original claim. Rather, Applicants intend to file a continuation application to pursue the breadth of the claims as filed. Applicants believe that the Examiner has not made a sufficient showing of inherency of the teachings of the asserted prior art, especially given the lack of teachings in the cited references of the properties that Applicants have recited in their claims.

Further, by the present amendment, it does not follow that the amended claims have become so perfect in their description that no one could devise an equivalent. After amendment, as before, limitations in the ability to describe the present invention in language in the patent claims naturally prevent the Applicants from capturing every nuance of the invention or describing with complete precision the range of its novelty or every possible equivalent. See, Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 62 USPQ2d 1705 (2002). Accordingly, the foregoing amendments are made specifically in the interest of expediting prosecution and there is no intention of surrendering any range of equivalents to which Applicants would otherwise be entitled.

Examination of the pending claims and allowance of the same are respectfully requested at this time. If the Examiner has any questions regarding the present application, the Examiner is requested to contact the undersigned at (248) 292-2920.

If for some reason Applicants have not requested a sufficient extension and/or have not paid a sufficient fee for this response and/or for the extension necessary to prevent the abandonment of this application, please consider this as a request for an extension for the required time period and/or authorization to charge our Deposit Account No. 50-1097 for any fee which may be due.

Respectfully submitted,



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Dated: 2005 2005